

**YKY.CMI.A3**

**Detailed work programme for  
delivery of our drainage and  
wastewater management plan**

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## About this document

We submitted our PR19 business plan to Ofwat in September 2018. Ofwat reviewed the plan and published its initial assessment of our plan in January 2019. The assessment included a series of actions for Yorkshire Water to complete.

Action YKY.CMI.A3 specified “The company should provide a commitment to provide a detailed work programme by end August 2019 to assure us that the company will deliver appropriate drainage and wastewater management plans (DWMPs). The programme should ensure that the company can prepare and consult on its first drainage and wastewater management plan no later than the summer of 2022 to enable revised plans to be prepared in early 2023 to inform PR24 business plans.”

On the 1 April 2019 we responded to Ofwat and committed to reviewing our programme by the end of August 2019. This document outlines our detailed work programme for delivering out drainage and wastewater management plan to answer Action YKY.CMI.A3.

## Our detailed work programme for delivery of our drainage and wastewater management plan

### Introduction

We have engaged with the Water UK led ‘21<sup>st</sup> Century Drainage’ programme since its inception and have taken key roles on several the different work streams. The development of the Drainage and Wastewater Management Plan Framework has emerged from this ground-breaking project and we continue to be involved at both Project Steering Group and DWMP Implementation Group level. Our engagement has helped us contribute to the published DWMP Framework and helped us in the practical application of the Framework to our business

Our business plan submitted in September 2018 described our service challenges and our approach to Drainage and Wastewater Management Planning in Appendix 15c. We summarised our AMP6 development of Strategic Drainage Management Plans (SDMPs) as a strong foundation for our DWMP. We also discussed their alignment with the DWMPs, the application of the DWMP framework in our company and we included a preliminary DWMP delivery timeline and a preliminary activity schedule.

Since the submission of our business plan and the publication of 'A framework for the production of Drainage and Waste Water Management Plans' in September 2018 we have applied the framework to our business through an establishment phase supported by a strong management structure. This work has developed the DWMP Industry Milestone Outputs from the Framework (see page 8, figure 5 and table 1 of appendix 15C) and the business plan preliminary DWMP delivery timeline and preliminary activity schedule (see page 9, figure 4 of appendix 15C) into a detailed work programme described in this response. We have added more DWMP activity detail, brought forward key delivery dates, enhanced stakeholder consultation and put a greater emphasis on achieving partnership solutions. We are confident that we will deliver appropriate DWMPs and meet both Ofwat and Defra expectations and timescales

We see DWMP as an essential enabler to meet our ambitious performance commitments for the next 25 years, to meet our customer's high expectations and the significant challenges we face such as affordability, climate change, growth and aging infrastructure.

## Our management structure

Our Asset Management Directorate is accountable and responsible for producing our DWMP. The DWMP team are part of our Wastewater Environment and Strategy Team within the Strategy and Policy section

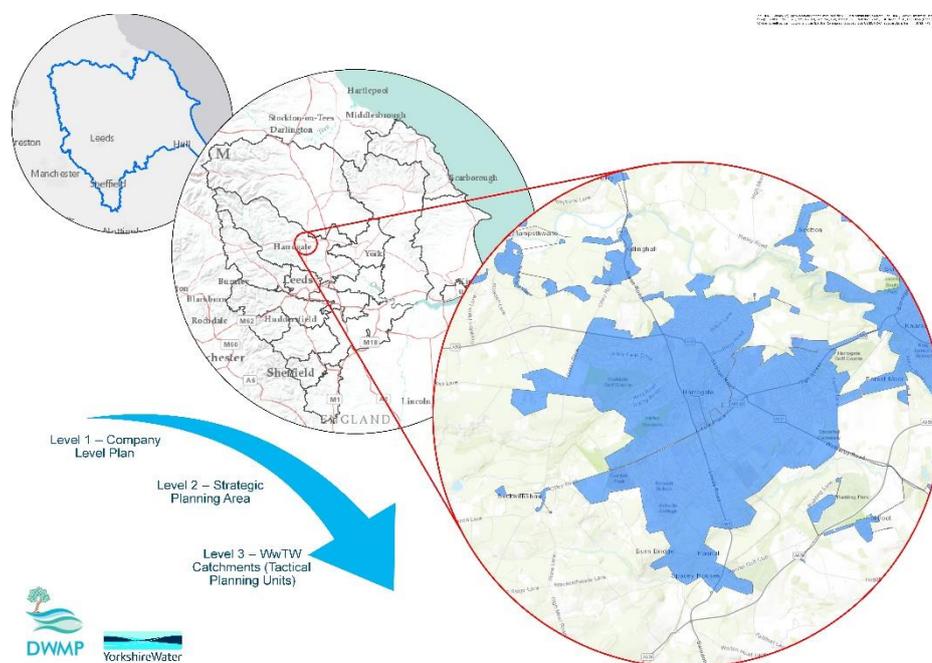
Our Drainage Strategy Implementation Manager is the dedicated lead and works closely with external resources provided by our strategic planning partner Stantec. This team was responsible for successfully delivering our Strategic Drainage Management Plans and have proved effective at delivering innovative solutions to complex challenges.

Stakeholder engagement is a key element of our delivery plan and our Flood Risk and Engagement and Internal and External Communications teams will play a pivotal role in supporting the DWMP team along with other operational and asset management colleagues.

## Our progress to date

In this section we describe our progress to date in implementing DWMPs in Yorkshire to demonstrate the delivery of the early elements of our DWMP programme.

DWMPs will build upon our experience gained from AMP6 major multi agency SDMP pilot studies in Leeds and Sheffield to develop our SDMP process. This has involved working closely with stakeholders to identify long term pressures on our assets and develop integrated partnership opportunities. We are now aligning this established process with the Drainage and Wastewater Management Plan Framework.

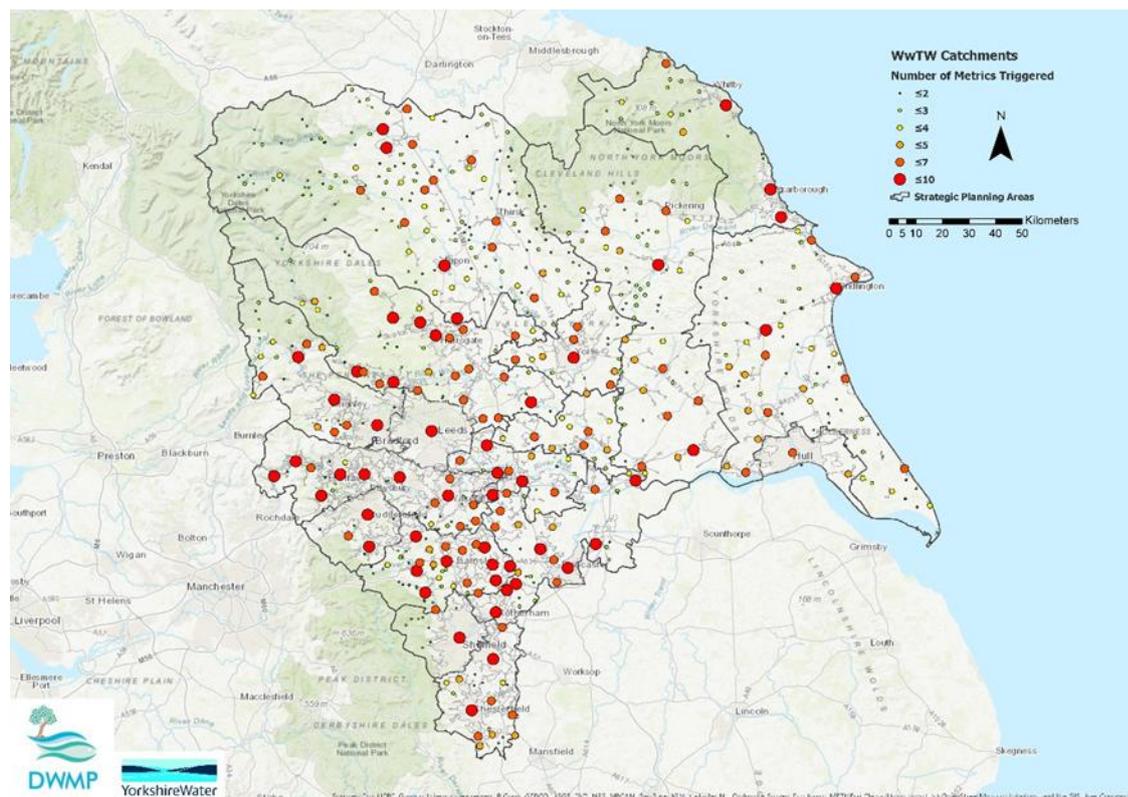


**Figure 1 Outline of our Company, Strategic Planning Area and Tactical Planning Unit boundaries**

We have over 600 wastewater treatment works catchments which we are using as our Level 3 Tactical Planning Units (TPUs) and these are grouped together to form 17 Level 2 Strategic Planning Areas which are closely aligned to the Water Framework Directive River Basin catchments. The boundaries of these areas are shown in Figure 1. For

three of our major cities, Hull, Leeds and Sheffield where we had existing Multi agency network models and established stakeholder relationships our level 3 and level 2 catchments are the same, ensuring that we can build on our existing relationships with stakeholders and enhance previous collaborative initiatives.

Since the submission of our business plan we have undertaken several iterations of the first step in the DWMP framework, the risk-based catchment screening and almost all our level 3 WwTW Catchments TPUs trigger moving forward into the Baseline Risk and Vulnerability Assessment (BRAVA). As a proportion of our customers this equates to over 99% of our connected population, and the size of catchments triggered varies from the very small, with populations of less than 25, to the large urban areas such as Leeds. Although the number of catchments triggering BRAVA is higher than other companies the proportion of population covered is in line with other companies results. This is potentially due to a conservative approach being taken during the screening process, but we believe that this allows more open discussions around the challenges of the smaller catchments with our stakeholders. The geographical locations of the catchments and the level of RBCS triggers is demonstrated in Figure 2.



**Figure 2. Outputs from risk-based catchment screening showing location of catchments and the number of metrics breached.**

To provide greater granularity we are further assessing our Level 3 TPUs with a pre-BRAVA assessment to help us focus more efficiently on catchments where there are issues to address. We have engaged with our Strategic Planning Partner 'Stantec' and based on the availability of network and treatment process models, and the number of RBCS metrics breached and our pre-assessment process we have completed the network modelling for 7 catchments and are now starting to progress a further 58 catchments where models are available representing 74% of our customers. Additional models are becoming available as we complete our AMP6 modelling programme and these catchments will be programmed for BRAVA when complete. The work demonstrates our focus on developing and applying the DWMP framework to Yorkshire.

## Next steps and innovation

In this section we describe our next steps in implementing DWMPs in Yorkshire to demonstrate the development, application and delivery of our DWMP programme.

### Timescales

To ensure that we gain insight into the long-term resilience of our catchments we have decided to predict the performance of our assets over four-time horizons: current, 2030, 2050 and 2080. Our inclusion of an additional extended timeline will have lower confidence in our outputs, but the 2080 horizon reflects the longevity of our infrastructure assets and enables us to have a strategic view on the risks related both to climate change and asset health.

### Developing the BRAVA methodology

The progress discussed in the previous section covers 74% of our population. Most of the remaining catchments are currently unmodelled but they are typically small and simple catchments where full network and process models may not be required to complete the DWMPs. For these catchments we are developing a process which does not rely on detailed network models so that BRAVA and problem characterisation can be carried out based on a proportionate and appropriate scale.

We anticipate that the BRAVA for the remaining catchments may identify some with complex issues or interactions with other stakeholder assets. For these catchments network and process modelling will be undertaken either before completion of this initial

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DWMP or as part of a planned intervention during the following AMP using an agreed prioritisation process.

A key element of our BRAVA methodology is the initial engagement with key stakeholders and the identification of shared planning objectives and interactions which will influence further joint working. We made a key commitment during our innovative SDMP pilots to develop and embed GIS routines within the company which enable us to understand risk and identify opportunities and repeat analysis to quickly review the impact of change. We have specific routines which allow us to visualise the capacity of our network and identify opportunities for surface water removal. We believe that these will facilitate the identification for non-traditional interventions to increase effective capacity in the combined network, reduce flooding, pollution and CSO spill frequency and reduce flows at our treatment works supporting energy saving. Delivery of such identified interventions will increase the overall resilience of our catchments to the pressures of climate change, increasing population and urban creep. We acknowledge that we also face significant challenges due to the increasing age of our assets and will use our infrastructure and non-infrastructure deterioration models to help us understand the risk and impact of deterioration.

In previous AMP periods we have taken a risk-based approach to building detailed models which are of sufficient granularity to allow us to move from strategic risk identification to delivery of interventions smoothly. Our AMP6 SDMP experience demonstrates that this approach, linked to our GIS based data analysis will reduce the need for feasibility studies and enable us to optimise our decision-making during option development and benefit appraisal.

## Engagement

We are actively engaging with our stakeholders and we have attended the Yorkshire Regional Flood and Coastal Committee to introduce the concept of DWMPs and outline our proposed methodology. We are refining our communication and engagement process to reflect the strategic nature of DWMP and ensure that we complement our existing stakeholder interfaces. Our intention is to have regular meetings with stakeholders at Strategic Planning Unit level and we will encourage open and active dialogue throughout all stages of DWMP delivery. We feel this is particularly important as we apply the DWMP framework to catchments and anticipate that there may be multiple iterations of local catchment plans until publication of the final document.

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## Programme

Our DWMP programme is a development from previous information that we shared with you in Appendix 15C DWMP of our business plan submission. Since this time, we have reviewed our milestones as a result of changing expectations of our stakeholders and our experience of applying the DWMP framework to date.

Our programme reflects our anticipated activities and duration based on our current understanding. The DWMP framework is new and immature and we envisage that experience may develop the scope of work required. This is an important part of the DWMP review process. We currently envisage DWMP may need to evolve and respond to uncertainty around the volume and type of external issues raised through our stakeholder engagement. These external issues need to be understood and investigated to enable the subsequent development of potential partnership interventions.

## Conclusion

Since the submission of our business plan in September 2018 we have applied the DWMP framework to our business and developed the detailed work programme to deliver our ambitious first DWMPs. Our progress to date and our next steps described above demonstrate that application of the DWMP framework to Yorkshire and gives confidence that we will prepare and consult on our first DWMP by summer 2022.

## Annex

Annex 1. Drainage and Wastewater Management Plan programme

Annex 2. DWMP Activity Steps

# Annex 1. Drainage and Wastewater Management Plan programme

DWMP Programme 2019																				
DWMP Activity	2018				2019				2020				2021				2022			
	Q1	Q2	Q3	Q4																
Strategic Context																				
Planning Objectives																				
Risk Based Catchment Screening																				
RBCS Annual Review																				
RBCS Methodology Review and update																				
Develop stakeholder engagement portal																				
Initial Stakeholder engagement (RFCC, SPAs)																				
Baseline risk and vulnerability assessment																				
Demand forecasting																				
Network and process modelling																				
BRAVA Summary																				
Develop and refine BRAVA methodology ( Modelled catchments)																				
Develop and refine BRAVA methodology ( non modelled catchments)																				
BRAVA Stakeholder engagement (TPU level)																				
Catchment resilience assessment																				
Problem characterisation																				
Stakeholder opportunity review																				
Options development and appraisal																				
Generic intervention development																				
Company intervention identification and appraisal																				
Partnership opportunity intervention development and appraisal																				
Programme appraisal																				
Programme Stakeholder engagement																				
Documentation, stakeholder information dissemination																				
Final DWMP programme																				
Publish DWMP (PR24)																				

## Annex 2. DWMP Activity Steps

DWMP step	Activity	Completion Date	Description
<b>Strategic context</b>	Review long term challenges	September 2019	Review future challenges around drainage and wastewater management in Yorkshire over short term, medium- and long-term horizons. This information will be used to develop our shared planning objectives and support the identification of criteria used to assess individual catchments (tactical planning unit).
	Planning Objectives	December 2019	Setting of the performance targets for the periods, 2030,2050and 2080. These will be decided at catchment and regional level and will be used to help determine when performance becomes unacceptable and interventions are required.
<b>Risk Based Catchment Screening</b>	Risk Based Catchment Screening	Annual review	Annual review of individual catchments performance against the risk-based catchment screening metrics to assess whether a catchment should be considered during the Baseline Risk and Vulnerability Assessment.
	Risk Based Catchment Screening Methodology Review and update	Annual review	From 2020 onwards we expect this to be an annual review of the RBCS metrics and they are applied. The review will include reviewing the need for, and where required, developing bespoke metrics to assess catchment performance.
<b>Stakeholder Engagement</b>	Develop stakeholder engagement portal	December 2019	Development of interactive GIS visualisation tool where data can be stored and analysed. Access to the portal will be available to all key stakeholders and customers.
<b>Stakeholder Engagement</b>	Initial stakeholder engagement	December 2019	Initial engagement with key stakeholders, establishing shared planning objectives and emerging characterisation and assessment of catchments.

DWMP step	Activity	Completion Date	Description
<b>Baseline Risk and Vulnerability Assessment</b>	Demand Forecasting	September 2019	Agree methodology for understanding demand forecasts for the agreed current and future scenarios. This will include identifying population change, urban creep, climate change assumptions and changes in per capita water consumption which can then be used during the modelling activities.
<b>Baseline Risk and Vulnerability Assessment</b>	Network and process modelling	September 2020	Use of hydraulic and process modelling to understand catchment performance at the different horizons to support catchment characterisation and identification of when intervention will be required to achieve planning objectives.
<b>Baseline Risk and Vulnerability Assessment</b>	BRAVA Summary	December 2020	Publish summary of BRAVA outputs
<b>Baseline Risk and Vulnerability Assessment</b>	Develop and refine BRAVA methodology (modelled catchments)	December 2019	Develop methodology for network and process modelling for catchments where there are existing models. This will include agreeing how demand forecasts are applied and 1D/2D modelling can be used to generate outputs.
<b>Baseline Risk and Vulnerability Assessment</b>	Develop and refine BRAVA methodology (non modelled catchments)	December 2019	Develop methodology which will allow BRAVA to be carried where there is no existing network or process model available at catchment level.
<b>Stakeholder Engagement</b>	BRAVA engagement	September 2020	Engagement with key stakeholders through out the BRAVA activities to agree catchment performance against planning objectives, identify shared risks and opportunities.
<b>Baseline Risk and Vulnerability Assessment</b>	Catchment Resilience Assessment	March 2020	Assessment of wider resilience issues at catchment level. This will include include the risk to assets from flooding, and outages in power and communications and how the impacts are/ can be mitigated.

DWMP step	Activity	Completion Date	Description
<b>Baseline Risk and Vulnerability Assessment</b>	Problem Characterisation	December 2020	This is likely to be an iterative process. Initial characterisation will be carried out using the BRAVA methodologies agreed for modelled and non-modelled catchments, but an additional review will be taken if during expert elicitation with stakeholders it is agreed that there is significant interaction between assets and systems which required further investigation.
<b>Baseline Risk and Vulnerability Assessment</b>	BRAVA Summary	December 2020	Summary of BRAVA outputs. The format will be agreed by the National DWMP Steering Group and will be published in December 2020.
<b>Problem Characterisation</b>	Problem Characterisation	September 2020	Identification of the Strategic Needs and Complexity score for each catchment reviewed during BRAVA.
<b>Options Development and Appraisal</b>	Generic Intervention Development	March 2020	Development of suite of generic interventions which can be used in preliminary stages of option development. It is intended that a wide range of options will be included, and they will be presented in a matrix format allowing easy evaluation of their risk, deliverability and potential benefits, e.g. emerging technology or established approach.
<b>Options Development and Appraisal</b>	Company intervention identification and appraisal	December 2021	Where only Yorkshire Water risks are identified and there is no relationship or opportunity to work with other stakeholders' appropriate interventions will be developed and costed allowing a benefit appraisal to be undertaken.
<b>Options Development and Appraisal</b>	Stakeholder opportunity review	December 2021	Where partnership opportunities have been identified during engagement interventions will be developed in conjunction with the stakeholders to address the shared risk. Evaluation will be made of the wider benefits and where appropriate external funding will be leveraged.

DWMP step	Activity	Completion Date	Description
<b>Options Development and Appraisal</b>	Option optimisation at catchment and regional level	December 2021	Using our established 6 Capitals approach, options will be optimised for each epoch at catchment and regional level.
<b>Stakeholder Engagement</b>	Stakeholder review and appraisal of options	June 2022	It is expected that stakeholder engagement around option development and appraisal will be an iterative process and we expect to have many conversations with stakeholders and customers during this phase. The level of engagement will be determined by multiple parameter including amongst many other factors, the complexity of interventions, the level of risk, the proposed phasing of interventions and value of investment required.
<b>Programme Appraisal</b>	Programme Appraisal	March 2022	Using our established Decision Making Framework an optimal proposed programme will be developed.
<b>Final DWMP Programme</b>	Draft DWMP Documentation	June 2022	We will publish our Draft DWMP in June 2022, with additional supporting information available to key stakeholders and customers.
<b>Stakeholder Engagement</b>	Consultation	August 2022	We will consult on our Draft DWMP across the region, and where appropriate we will facilitate group discussions. We will take in account the feedback we receive, and this will allow us to revise our plan and publish our initial DWMP.
<b>Final DWMP</b>	Publish DWMP	December 2022	We will publish our first DWMP and it will form part of our PR24 Wastewater submission.

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